

### REMARKS

Applicants submit that any amendment which places an application in condition for allowance, which makes suggested changes, and/or which simplifies or removes issues on appeal, should be entered after a final rejection. Entry of the present amendments and allowance of all pending claims is respectfully and urgently solicited.

The Examiner rejected Claims 28-31 under 35 USC § 251, characterizing them as "an improper recapture of claimed subject matter deliberately canceled in the application for the patent upon which the present reissue is based and a reissue applicant's failure to file a divisional application is not considered to be an error causing a patent granted on elected claims to be partially inoperative by reason of claiming less than the application had a right to claim. Thus, such error is not correctable by re-issue of the original patent under 35 USC 251. In re Watkinson, 900 F2d 230, 14 USPQ2d 1407 (Fed. Cir. 1990); In re Orita, 550 F2d 1277, 1280, 193 USPQ 145, 148 (CCPA 1977). See also In re Mead, 581 F2d 251, 198 USPQ 412 (CCPA 1978). See MPEP 1450-51."

Claims 28-31 are now cancelled, without prejudice, to advance the reissue application to allowance.

The Examiner objected to applicants' specification and rejected applicants' claims 32-35, 37-67, and 69-77 under 35 USC § 112, ¶ 2. The Examiner stated that "as their process of making the mesoporous films would appear limited to silica (does not include all metal oxides), aqueous solvents (no support for organic solvents), and acid catalyst (no support for base catalyst) as the applicants' specification would appear to be enabling only for silica, aqueous solvents, cationic surfactants, acid catalysts, specific heating temperature, other ranges, etc. Thus, applicants' new claims are not commensurate in scope with their enabling disclosure. Note that the same can be said for all new matter rejections noted below because applicants' specification is not commensurate in scope with their enabling disclosure. Applicants only have support for the enabling features specifically recited in their original disclosure."

In response, unsupported temperatures and other unsupported ranges have now been removed.

The term "metal oxide," where it was previously without silica qualification, has now been removed from all claims.

The phrase "aqueous solvent" has now been removed from all most claims, while others retain the limitation. The phrase has often been replaced either by "water and alcohol" or by "water and alcohol solvent". Applicants have ample support for the term "alcohol", as noted in Bruinsma at column 8, lines 35-38, hydrolysis of an alkoxide silicon precursor gives alcohol, and for "alkoxide" silica precursors on the last line of Bruinsma at column 3. It was well known that applicants' TEOS would give ethanol, and that applicants' TMOS would give methanol, etc. See Bruinsma at column 7, lines 23-30. Ethanol is typically added (see Example 1), except when spray drying (see Bruinsma, first paragraph of column 16) where "water rather than alcohol dilution is used to avoid possible explosion hazards", in which case hydrolysis of our TEOS will give some ethanol. Again, see Bruinsma at column 7, lines 23-30.

The phrase "acid catalyst" is now used in some independent claims, but "catalyst" alone is used in others. Both base and acid catalysts were well known in this type of chemistry prior to applicants filing of this application. A "base catalyst" described, for example, in the article by Kresge, et al, cited in the first full paragraph in Bruinsma at column 2, and also included as Appendix D, at tab 2, of applicants' amendment of 11/13/00. Thus it is acknowledged that the term "base catalyst" is not expressly supported, but it is submitted that the term "catalyst" is supported in applicants' application.

All references to "anionic surfactant" have been removed. While the "preferred surfactant" is indeed cationic, applicants have used a non-ionic surfactant in example 4. Polyethelene oxide is supported in Bruinsma at column 12, lines 7-20, and is a known neutral surfactant (see e.g., Brinker's background, Patent 5,858,457, at column 2, lines 24-41). Note that applicants show the polyethelene oxide to be dispersed in the dried, but not calcined, fiber. See Bruinsma at column 12, lines 56-58. Thus both the CTAC and the polyethelene oxide exhibit the behavior of surfactants in this Example 4. See also the Tanev reference, of record (being in the paragraph bridging columns 1 and 2 of the background of this application), and note at page 1267 of Tanev, in the full paragraph in second column, a neutral surfactant is used therein. Thus it is acknowledged that the term "anionic surfactant" is not expressly supported, but it is submitted that the term "surfactant" is supported in Bruinsma.

The Examiner rejected claims 32-35, 37-67 and 69-77 under 35 USC § 251 and 35 USC § 112, ¶ 1, on the grounds that the specification as originally filed would not appear to

provide support for the invention as is now claimed, noting; "With respect to claims 32 and 64, applicants newly added claim is quite similar in scope to Brinker et al.'s claim 1. Yet, applicants' explanations regarding XRD peaks (where is the support for XRD range of 2 to 6?), as well as some of the initial starting components of soluble source of metal oxide (outside scope of original invention-original Bruinsma patent limited to silica as the sole metal oxide), water, organic solvent, surfactant, acid and base catalyst, etc. represent new matter and is thus not convincing. There is no support for organic solvent (only an aqueous solvent), there is only support for an acid catalyst (col. 6, line 59-no support for a base catalyst). Further, there would appear no support that the surfactant is a free surfactant."

The claims have been amended and the phrases "metal oxide" (without limitation), "organic solvent", "base catalyst" and "free surfactant", and all XRD references have been eliminated from these claims.

Claim 32 is cancelled hereby, and is replaced by new claim 99. Claim 40 is amended as suggested by the Examiner, and is in condition for allowance. In claim 40, the term "rapid" has been deleted, and an evaporation of solvent time limitation (supported in Bruinsma at column 4, lines 11-16) has been inserted for clarity.

The Examiner also states that "applicants' claims 33 and 65 are also new matter. The Examiner is not convinced that because refractive index was measured that this is necessarily indicative of an optical coating."

Claim 33 has been cancelled and replaced by new claims 100 and 101, which omit the term "optical coating." Claim 65 is cancelled.

The Examiner also states that "applicants' claim 34 and 66 are also new matter. However, applicants do not have support to aluminum oxide alone".

Claim 34 has been cancelled and replaced by new claim 102 which omits the "aluminum oxide"-only limitation. Claim 66 is cancelled.

The Examiner states that "Claims 38 and 70 are new matter. Applicants have support for a temperature of 450C yet this does not give them support for approximately 400C. It would appear that applicants may have support for "approximately 450C" but it is not seen how applicants believe that 450C is approximately 400C. "

These claims have been amended as suggested by the Examiner (with new claim 105 replacing cancelled claim 38).

The Examiner states that "Claim 53 states "as low as *approximately* 1.16 in reference to refractive index which is new matter", that "It was determined that the claims 52 through 54 would not appear supported by the original disclosure and still are new matter", that "Further, claim 42 does not limit the precursor solution to silica which is thus outside the scope of the original disclosure and constitutes new matter" and that "Claims 55 and 63 are new matter because applicants do not have support for a low dielectric constant of less than approximately 2.5".

These claims (42, 52-55 and 63) have been cancelled.

The Examiner also states that "Claims 56-57 are new matter."

Claims 56-57 are now cancelled.

The Examiner also states that "Claim 59 [sic: claim 58] is also new matter since there is no support for an 'organic solvent', but only support for an 'aqueous solvent' and Claims 61-62 is new matter because applicants claim an organic solvent which is new matter not supported by their original disclosure."

The phrase "organic solvent" has now been removed from claim 58 and the phrase "aqueous solvent" is substituted.

Claims 61-62 are now cancelled.

The Examiner also states that "New claims 72-77 would also appear to constitute new matter for the same reasons as noted above for reasons such as XRD (x ray diffraction range of 2 theta 2-6 degrees)."

Claims 72-77 have been cancelled.

The Examiner in his response notes that "the presentation of product claims is clearly impermissible."

Applicants disagree, for all the reasons of record. Nevertheless, to advance the present reissue application, these claims (28-31) have now been cancelled.

The Examiner notes that "applicants argue that the term 'surfactant concentration much less than the critical micelle concentration' is not definite, and that he has reconsidered yet still disagrees."

The term "much less" has now been eliminated.

The Examiner states that " It would appear that based upon the declaration of Dr. Liu that the applicants may have support for a surfactant concentration less than CMC (critical micelle concentration). It is expected that applicants will amend their claim to delete the term 'exceed' since this means the concentrations of CMC and surfactant can actually be equal since it is not exceeded and this would not appear to be the case for the instant invention."

The term "exceed" has now been deleted.

The Examiner states that "applicants argue that every one of Figures 5, 7, 8, 9, 10, 16, 18, 19, 20, and 21 show peaks characteristic in the claimed 2 to 6 degree theta range. In rebuttal, it is the Examiner's position that there is no literal support for the specific 2-6 degree theta XRD range anywhere in the applicants' original written disclosure."

These particular "two theta" limitations have been deleted from the claims.

The Examiner also states that "applicants argue that they have support for claims to a metal oxide because of the Dr. Berg declaration that silica has been classified under metal oxides in technical literature for over 10 years. ... Applicants do not have support for all metal oxides but merely have support for silicon dioxide or silica and therefore applicants' usage of 'metal oxide' in their claims is not well taken and is new matter."

The term "metal oxide," without at least a silica-based limitation thereto, has been eliminated from these claims.

The Examiner also states that "applicants next allege that 'aqueous' solvents, according to Dr. Berg again, would have been understood to be simply water mixed with one or more other solvents such as alcohol, and he therefore concludes that Brinker's 'organic' solvents are simply an organic solvent containing one or more solvents including water, the very same thing as Bruinsma's aqueous solvents. Applicants thus conclude that therefore one of ordinary skill in the art would have understood allegedly that aqueous solvents in the Bruinsma patent are the 'same' as the organic solvents in the Brinker patent. The examiner disagrees. Webster's II New Riverside Dictionary defines aqueous as 'relating to, like,

containing, or dissolved in water.' The term aqueous solvent, contrary to Dr. Berg's own definition of this term, can simply refer to water. While it is true that while an aqueous solvent could potentially include other solvents such as organic solvents, it is first worth noting that applicants have absolutely no support for any organic solvent in the 'aqueous solvent' of the prior Bruinsma patent. There is simply no organic solvent anywhere in the original Bruinsma patent disclosure. The examiner will immediately withdraw his new matter rejection if applicants simply point out the specific location of any organic solvent in their original disclosure. It is the examiner's position that one of ordinary skill in the art would certainly have understood that 'aqueous solvent' has a separate and distinct meaning from an 'organic solvent'. The applicants' attempt to characterize the term 'aqueous solvent' by a meaning new or contrary to what is the conventional meaning of this term is erroneous and improper. While a term used in the claims may be given a special meaning in the description of the invention, generally no term may be given a meaning repugnant to the *usual meaning* of the term. In re Hill, 161 F2d 367, 73 USPQ 482 (CCPA 1947)."

Applicants point out the alcohols in general, and ethanol in particular, are "organic solvents", and as noted above, both terms are used in applicants' specification. However, as noted above the phrase "water and alcohol" has been substituted in most of the claims, and that the unobjectionable term "aqueous solvent" remains in others.

The Examiner also states that "applicants next argue that Dr. Berg's expert testimony is supportive of the conclusion that such a teaching is not limited to cationic surfactants [sic: base catalyst]. In other words, applicants believe they do have support for both acid and base catalyst."

The term "base" has now been eliminated. As noted above, applicants submit that they have support for "catalyst" alone.

The Examiner further states that "Again, it would appear Dr. Berg seems to not understand the concept of new matter or patent procedure regarding original disclosed application. Dr. Berg erroneously applies the wrong standard for new matter noting that 'one of ordinary skill in the art' would have 'known' on August 26, 1997 that other surfactants such as and including anionic, non-ionic, and amphoteric types can be usefully employed in 'substitution' in the original invention or disclosed process of Bruinsma for forming mesoporous films. In rebuttal, as stated above, this is not the standard for adding subject

matter to the original disclosure and applicants are respectfully invited to point out where in the MPEP they derive this new standard (the "obvious to one of ordinary skill in the art to therefore substitute new not previously disclosed surfactants in the original disclosure"). This substitution of new surfactants into the original disclosure is not proper and is clearly new matter. Again, in all fairness to applicants, the examiner would withdraw his new matter rejection over these added surfactants or catalysts if applicants point out specifically in their specification where they derive their support for these newly added surfactants or catalysts."

Again, while applicants do not have support for the term "anionic surfactant", nevertheless polyethelene oxide is supported in Example 4 of Bruinsma at column 12, lines 7-20, and is a known neutral surfactant and is dispersed in the dried fiber. See Bruinsma at column 12, lines 56-58. Thus, both the CTAC and the polyethelene oxide exhibit the behavior of surfactants in this example. Again, see also the Tanev reference, and note the neutral surfactant is used therein. The Examiner apparently disagrees with the experts.

The Examiner states that "applicants also note regarding the Berg and Liu declarations that these allegedly are free surfactants in the same sense of the surfactants as the Brinker patent."

The term "free" has now been eliminated.

The Examiner "disagrees once again since applicants do not have support for the broader range of surfactants disclosed by Brinker and any addition to their disclosure in attempt to do so constitutes new matter.

"The applicants again use Dr. Berg regarding the insertion of acid and now base catalysts because one of ordinary skill would have understood to do so. The examiner notes that applicants have only support for acid catalyst and thus the insertion of 'base catalyst' is new matter.

"The applicants hold the position that since they teach refractive index measurement they thus have support for optical coatings. Applicants argue that refractive index is a property measured by optical coatings to show they have support for 'optical coatings'. In rebuttal, there was no mention nor any literal support using the word optical in the applicants' original disclosure. The examiner is not convinced that applicants necessarily have support because of one parameter that may be used in the measurement of optical coatings. There is

"Also, the applicants refer the examiner to Figure 4 regarding refractive index 'n' supports numerous claims to refractive indices. Yet, again, applicants claim 42 is not limited to silica (Note also that Figure 4 is limited to silica) and thus applicants argue features not claimed since neither dependent claims 52-54 nor independent claim 42 states that silica is the precursor solution.

"The applicants argue that refractive indexes of less than 1.25 and less than 1.16 are not new matter because of Figure 4.

"The applicants then state they are entitled to any refractive index from Figure 4 for values of refractive index less than 1.25 and 1.16 respectively. The examiner disagrees...

"The applicants conclude that there is a well known relationship between refractive index, porosity and dielectric constant.... The Bruinsma patent is clearly limited to silica as the only metal oxide."

Claim 42 and claims 52-54 have now been cancelled. While applicants submit that there is support for certain ranges of refractive indexes, these particular refractive index claims have been deleted. Applicants would also point out that there is support for other metal oxides (e.g. alumina) when together with silica.

New claims 78-98 have been added to better define the invention. No new matter is added. The claims relate to processes for forming a "precursor sol" or "mesoporous material" into a "preform" or "mesoporous structure" (as supported in the first sentence of the Summary), and are not limited to films. It is believed all terms therein are also supported, as discussed above. The evaporating terms and time are given at col. 4, lines 9-16. Claims 80, 83, 86 and 94 are for film, e.g. as in examples 1, 2, 5, and 10; and claims 81, 87 and 95 are for spray dried materials (e.g. fibers or powders), e.g. as in Examples 3, 4, 6, 7, 8, and 9.

Finally, applicants add new claims 99-108, which correspond generally with original reissue claims 32-39 cancelled hereby to define overlapping inventive subject matter with the Brinker patent cited above. Specifically, new claims 99-108 correspond with Brinker claims 1-5, 9, 13 and 14 and are clearly patentable to Bruinsma since they contain only terms found within the original Bruinsma disclosure. No new matter is added. Moreover, the Examiner's objections to and rejections of claims 32-39 are comprehended by replacement claims 99-108, as described above. For example, these replacement claims are limited to silicon oxide, catatonic surfactants and acid catalysts, as suggested by the Examiner, and still the amended




claims constitute interfering subject matter with the Bruinsma patent. Applicants respectfully request an interference with Brinker based upon the provisional allowability of claims 99-108 over all of the prior art and the Brinker patent filed after the filing date of the instant Bruinsma application.

New claims 109-115 are added to further define the invention wherein the film exhibits expressly low indices of refraction support for which the Examiner has conceded. Specifically, the Examiner has stated in the most recent Office Action (11/16/00) that "applicants would appear limited by their smooth curve to silica for their metal oxide in amounts possibly and by estimation of Figure 4 down to about 1.14 at best." Accordingly, new claims 109-115 specify a range of refractive index depicted in the graph of Figure 4.

Accordingly, a favorable action, allowing applicants' amended claims, is respectfully requested. Applicants' undersigned patent counsel requests a courtesy phone call from the Examiner upon reconsideration and prior to issuance of an Advisory action or Notice of Allowance.

Respectfully submitted,

MARGER JOHNSON & McCOLLOM, P.C.

By   
James G. Stewart, Reg. No. 32,496

MARGER JOHNSON & McCOLLOM, P.C  
1030 S.W. Morrison Street  
Portland, Oregon 97205  
Telephone: (503) 222-3613



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